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The consequences of Flight Shame on tourists' behavior and their transportation preferences

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Abstract

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The carbon footprint of individuals while traveling is often a neglected aspect of the holiday, although the effects of global warming are widely visible. This is why Flight Shame was born, to raise awareness among travellers and to promote choosing the more sustainable mean of transport instead of airplanes.

This thesis aims to analyse to which extent residents of Helsinki have been influenced by the phenomenon. Moreover, both their previous and future behavior regarding what Flight Shame promotes are explored. Based on these, forecasts of possible scenarios for the future of transportation sector are done.

The theoretical framework is mainly concentrated on each factor that Flight Shame is about, such as the role climate change plays for international tourism and vice-versa and the environmental benefits of using train when traveling. Furthermore, it introduces the basis of forecasting followed by its usage for tourism industry.

The research model used for the qualitative forecast is based on consumer intention. The collection of data was done through a survey spread through online channels. The questions meant to find which are the driving-factors for the judges when purchasing a ticket, the attitude towards climate change when traveling and how should be the situation handled in the next centuries.

As expected, the results of the survey showed that majority of respondents have not heard about Flight Shame. However, the interest of people to what the phenomenon promotes is various. They have knowledge about the effects of airlines on global warming, but there are factors to be improved to make them switch to other means of transport. The extent to which aviation industry will be affected by Flight Shame and its implications depends on various external factors.

The analysis of the results suggested three possible scenarios that can occur in the next years. They depend on the investments done by the transportation companies, as well as the implication of the customers during this process. The favorable one for environment is where measures are taken into improving high-rail network worldwide, which will make travellers to switch flights with trains. There is another possibility that the technological breakthroughs of airlines will cancel the aim of Flight Shame. However, the worst scenario for the long-term future implies that no significant change will be done soon.

Conclusion involves a level of uncertainty because any of the above situations can become reality. Although it is clear that Flight Shame raises public awareness, the lack of previous surveys on this topic in Helsinki and the low number of respondents are influencing the accuracy of the results. It would be beneficial for the transportation industry and researchers alike to continue their work on this topic.

Keywords
Climate change, flight shame, transportation industry, forecast, customer behavior

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1 Introduction

1.1 Background of the topic

Across all the future needs of the people around the world, the call for less demand in traveling will become a challenging hill to climb. Nowadays, we all obviously consider traveling almost as a birth-right already, which represents a threat related to the right path that must be chosen for the future of our environment. As it can be seen in Figure 1, according to UNWTO and Environment Entitled, the largest contributor to the global warming in the tourism field is the transportation sector, responsible with around 75 per-cent out of the totals CO2 emissions (World Tourism Organisation & International Transport Forum, 2019).

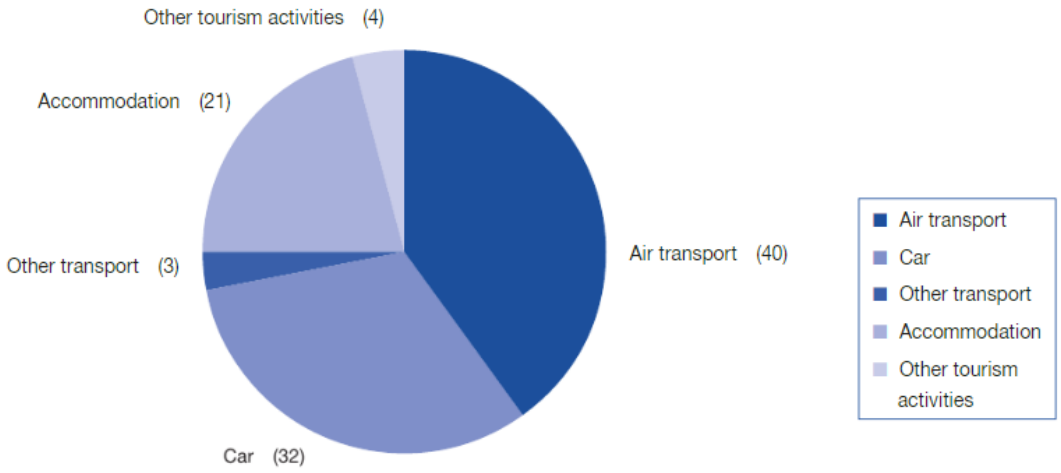

Figure 1. Contribution of various sub-sectors of tourism Co2 emissions, 2005 (%)
Source: World Tourism Organization and United Nations Environment Programme (2008)

Usually, if the detrimental effects of the industry on the environment become the theme of the discussion, the civil aviation will get a special mention. It is estimated that at the moment, it accounts for 3% of global carbon-emissions from fossil-fuel, and forecaster expect a continuous growth. (Delli, 2019) Taking into consideration that air traveling globally has been doubled in the previous 15 years, according to UBS, it is crucial to consider eco-friendly alternatives. UBS is the largest global wealth manager around the globe, working for building a brighter future in all domains. Industry forecasts from plane makers Airbus and Boeing predict growth will continue at that rate until 2035. (Locker, 2019)

New research is showing that 2019 was the second-hottest year on record planet's surface, and the hottest ever for oceans, the problem is real. (Carrington, 2020). All the efforts of the airports and airlines to manage a favorable environmental accountability seems like is not enough for a safer future. This is the reason why the movement called

“flygskame”, was born. It is a Swedish word, and it can be translated as “Flight-shame”. If you ask me, the name really fits the purpose of suggesting travellers to use other means of transport, especially train, because being embarrassed is kind of everyone’s Achilles Heel. The emotional impact is being searched, and the one of the purposes of this thesis is to determine to what level it has been reached.

According to Forbes (Lane, 2017) the sensitiveness of travellers related to their carbon footprint will raise in the near future and will start to implement more sustainable practices in terms of their traveling options. They will start to put effort in delivering an eco-friendly experience for themselves as tourists and for their hosts. This idea is also supported by TrekkSoft, which affirm that the level of awareness has grown amongst travellers. TrekkSoft is a booking website, largest in Europe, for tours and activities related to tourism. The result would be observing that tourists will opt for more sustainable ways of traveling in the next period. (Kutschera, 2016) .During the past decade, a number of surveys suggesting this were done, and like the global overall tourism industry is showing, not only are we growing in international tourism travel numbers every year, but we are also growing in sustainability awareness.

Considering that the Flight Shame, a trend that suggests switch airplanes with trains and be conscious about personal carbon footprint while traveling, started in 2017 (BBC, 2019), my research aims to see to which extent it have been spread until 2020 among Helsinki residents and its consequences their mindset. Furthermore, with the results received, I will forecast the impact of the “flight-shame” on the demand through three different scenarios that can occur in the future. This would be helpful for managers in the aviation business, because reducing risk is essential. Forecasting tourism is providing tips for the right amount of supply personnel available for the customer needs. More than that, if the demand anticipation is done accordingly, extra financial costs might be avoided. They can also set strategic marketing goals depending on the consumer’s interests found by the survey.

I firstly got in touch with the subject while researching data about new trends in the traveling industry, last year. However, I feel concerned about the wrong direction of human’s choices, and their impact on the surrounding system. We already can experience what the climate change is capable of in terms of disasters. Also, I see myself in the future career as a worker in the aviation industry, so it is in my personal interest to search if there will be any at all. At the same time, the possibility of learning a method that can help predicting the near future is appealing for me.

The method that was found the most suitable to meet the purpose of the research is the one when the source of demand itself, the consumer intention forecasting via conducting an online survey aiming as respondents people living in Helsinki..

The objective of the research is to resolve if providers of flights from Helsinki should be concerned or not because of Flight Shame. For this purpose, consumer intention model as a research method with its advantage of asking the actual purchaser of the tickets. This might provide more insight about the future rather than opinion of expert judges from transportation field.

Also, its objective to gather enough information from a sample of the entire population and then generalize it for that population, in this case residents of Helsinki, allows as to understand clearly the errors which were possible to occur so methods to solve them can be prepared. They could be either sampling errors, non-response ones or even response errors. (Frechtling, 2001) However, they have been resolved by applying using estimations, by trying to achieve a high rate of respondents and by encouraging them to write carefully, honest and complete answers. The survey questions, available from March to April 2020, related to the relationship of travellers with Flight Shame or with what the phenomenon promotes were designed to match the steps of conducting the forecast. The theoretical framework has been selected to present all the aspects that support Flight Shame's purpose and create the basic knowledge about forecasting tourism demand.

1.2 Definitions

Considering that the content of the thesis must be understood accordingly by the reader, a list with definitions for the key terms of this research paper is compulsory. Their occurrence in the transportation industry is high, therefore their explanation is crucial.

Firstly, tourism can be defined as "comprises the activities of person traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes". Forecasting is "fundamentally the process of organizing information about a phenomenon's past in order to predict a future". (Douglas C. Frechtling, 2001, 4-8.)

Then, environment represents "the complex of physical, chemical, and biotic factors (such as climate, soil, and living things) that act upon an organism or an ecological community and ultimately determine its form and survival" (Merriam-Webster Dictionary, 2020.)

Tourism Demand is a term that is defined as ”the schedule of the amount of any product or service that people are willing and able to buy at each specific price in a set of possible prices during some specified period of time”. (University of Pretoria, 2009.) The use of product or service includes visitors’ arrivals in a country, their presence in the destination and the transport used. The way we can measure tourism demand is in variety of units, such as the “national currency, arrivals, nights, days, distance travelled, and passenger-seat occupied”. (Frechtling, 2001)

Forecasting represents predicting how the service demand will evolve over a time period, based on previous travellers’ demand behavior. Fundamentally, “it is the process of organizing information about a phenomenon’s past in order to predict a future” (Frechtling, 2001). Forecasting is seen as a key component by transportation representatives, as it serves for anticipating the traffic volume that will be needed in the future.

Accountability in environmental governance requires ”the obligation of persons or organizations whose activities may have or have an environmental impact to report to those actors that have a right to regulate, adjudicate, and penalize those actions that may be harmful to the environment”. (Scobie, 2016) For example, in this thesis it is disscused about who should be accountable for reducing the impact tourism has on the climate what what measures should be taken by that party.

Forecast accuracy is the used for calculating the degree of matching between the quantity predicted and its actual future value. In the history of tourism literature it was shown that forecasting accuracy depends on study location country of origin, on the measurement of its errors, on the frequency of data and its trend pattern.

Macro-environment represents the external influencing actions that will affect the demand of the aviation market without any chance to be controlled. These might be exchange rates, political turnovers, extreme weather or even digitalization.

Greenhouse gasses are the carbon emissions resulting from modern human activities, including burning fossil fuels, deforestation, aggressive agriculture. The most commonly used gas is carbon dioxide (CO_2) .They intensify the greenhouse effect, which means our planet atmosphere is a burning blanket we cover with, because all the radiations from the Sun do not bounce back into space.

Intentions, in this context, represent the statements that travelers will make about their future plans or about an action that could be controlled. Analyzing the behavioral intention of the public can provide accurate forecasts of tourism demand.

2 Climate Change and its Implications for International Tourism

2.1 The onship between global warming and tourism

In 1998, The Intergovernmental Panel on Climate Change (IPCC) was formed by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to evaluate the climate change and its potential impacts. IPCC aims to provide the scientific information needed to all the States around the World to guide them to take the right measures. WMO is responsible for the delivery of the accurate weather, climate, hydrological and related environmental services to the experts. UNEP is a global authority that establishes the environmental agenda, that makes decisions regarding the need of a sustainable development within the United Nations, and which acts as a supreme advocate for the global environment. Although the estimations are dependent on the modelling procedures chosen, IPCC suggests a scenario where the global average temperature will have been increased by between 1.4°C and 5.8 °C until 2100. Also, it is expected that the global mean sea level will indicate a growth between 9cm and 88cm in the same period. (IPPC, 2001.)

Between climate change and tourism, there is a bidirectional relationship, because tourism activities are impacted by both, as well as being a major contributor to this phenomenon. The events are creating both winners and losers in the tourism industry. On one side, the summer conditions in Northern Europe will become pleasant, which might switch the well-known holidays to the Mediterranean in the search for warm places, with domestic traveling. On the other side, Southern Europe is most likely to become extremely hot during the summer, going beyond human comfort.

Because of the expected climate conditions, the sector that will be suffering the most will be the ski resorts in winter destinations. Researches in Canada, Scotland and in the European Alps show that in the regions mentioned, it is expected to have a shorter season because of the lack of snowfall. On the same level of negative impacts, destinations which should expect a reduced number of tourists are the ones based on small islands, which will face considerable loss of land and higher intensity of storms. (Scott 2003; Harrison 1999; Elsasser and Messerli, 2001.)

The impacts of tourism on climate change has its repercussions, as shown in Table 1. Due to the fact that one is indispensable to another, the way high number of visitors affect the destinations will affect the level of accessibleness will be diminished.

Table 1. Summary of climate changes and their anticipated impacts on major tourism regions over the next 50-100 years (D. Buhalis, Carlos Costa 2006)

Area	Projected Climate changes	Environmental Implications	Potential Impacts on tourism activity
Northern Europe	-Much warmer, wetter winters -Warmer, drier summers -More “Reliable” summers	-Potential Stress on ecosystems ecosystem sensitive to warming -Damage to some ecosystems as a result of increased tourism activity	- Improvement of northern European summers triggers more domestic holidays -Warmer, more reliable summers also provide increased incentive for southern Europeans to travel to northern Europe
Southern Europe	-Warmer, wetter winters -Much warmer, drier summers -Eastern region sees especially sharp changes - Increased heat index -More days above 40 °C -More arid landscape -Small tidal range means grater impact of sea level rise	- Greater risk of drought and fire - Risk in water shortages - Greater personal heat stress - Beach degradation and habitat loss due to sea level rise -Increased vulnerability to tropical disease -More flash floods - Reduced air quality in cities	-Reduction in traditional Mediterranean summer holidays due to excessive heat, but increases in visit in current shoulder reasons -Increased incentive for southern Europeans to travel to northern Europe
North America	-Warmer winters -Warmer summers -Rise in heat index	-South-Est USA at greater risk from storms and beach erosion	-Florida may become less attractive

	- Slight rainfall increasing	-Sea level rise damages Florida coast and Everglades -Risk of coastal erosion and storm damage on east coast -Pacific coast at greater storm risk with higher rainfall and risk of coastal damage -Risk of tropical disease rises	-Carolina coast may become more attractive - Cities in Canada and along Eastern Coast may become too hot to visit in summer, but general, sightseeing travel unlikely to be greatly affected - Potential for stronger winter ski market due to reduced capacity in Europe, subject to suitable conditions in USA
South East Asia	-Little change in rainfall - Relatively little change in temperatures	-No dramatic climatic changes foreseen - Islands and coastal areas vulnerable to sea level rise - Coral Bleaching	-Limited influence on travel patterns, through decline in dive and beach market possible
Caribbean	-Warmer winters -Warmer summers -Small decrease in rainfall	- Vulnerable to sea level rise -Increased beach erosion - Coral bleaching and damage to reef -Salinization of aquifers -Higher energy costs for air conditioning	- Beach product offering becomes less attractive due to increased heat index, beach erosion, sea, and coral quality -Loss of confidence in destinations due to health risks

2.2 Flight shame movement

2.2.1 Implication of media in consumer choice.

The high number of interactions between many influences of the tourism industry, from political conditions to media attention, make the identification of the future scenarios quite unpredictable.

The past generations of tourism organizations used to believe that building awareness is dependent just on the public relations. On the other hand, the connection between the destinations and the demand is done with the help of media. The tourism industry, one of the world's fastest-growing ones, has been receiving more attention from the media. The grounds for this are the increased demand and supply and because of the issues related to safety and security while traveling. (Dimitrios Buhalis, 2006, p. 65)

In the first phase, the industry was informing the media about new tourism products, marketing campaigns that were carried out, and the performances that were achieved by the airlines. Nowadays, there are addressed also the issues regarding the development of a sustainability, product differentiation and also crisis communications.

Media might not be always agreeing with the tourism communications on what really matters. They have their own priorities, and raising the environmental awareness and social responsibility is one of them. This is how the movement of "flygskame", a Swedish word that can be translated as flight shame, was born, and spread. The term suggests the need of feeling guilty while choosing to travel by plane at a time when needs urgently and dramatically improve the greenhouse gas emissions situation. It has been referred to it also as being embarrassed by the choice of flying despite of being environmentally "woke".

It started in 2017, with an article wrote by the singer and songwriter Staffan Lindberg, where he publicly announced that him and five other famous friends of him will gave up flying. They were followed by the popular ski commentator Björn Ferry, opera-singer Malena Ernman and Heidi Andersson, the eleven-times world champion arm-wrestler. Another pioneer of the movement in the online is Greta Thunberg, a teenage climate change activist, who can be considered the face of trend. (Lound, 2020)

In order to promote the movement via media, they encourage to use train bragging (in Swedish tågskryt*)* by joining and posting pictures on the group called Tågsemester, translated as “train holiday”. They also suggest using the hashtag #jagstannarpåmarken which mean “I stay on the ground”, supporting their interests and mindset. The other option is not to post at all about your journey, to prove that you were not proud about flying at all and do what is named fly covertly (smygflyga in Swedish). The celebrities promoting the phenomenon are putting their efforts together on an Instagram account “Aningslosainfluencers”, gathering around 60.000 people that follow their actions.

2.2.2 The effects of flight-shame

The entire focus of the flight-shame is concentrated on the human-induced climate effects produced by flying. The adepts of the movement have been trying to influence the decrease of airplane demand. However, it is obviously that when speed and convenience are compared between the transportation modes, the situation is favorable for the aviation business.

Although maybe the trend was not seen as a threat to the industry, it has already a measurable impact on traveling patterns especially in its country of origin, Sweden. For Swedavia AB, a company that operates in over 10 Swedish airports, the number of passengers dropped continuously in the previous seven months, and it has its weakest passenger growth in a decade. (H. Hoikkala, 2019) Swedavia admits that the climate change topic is the reason for the 5% fall in passengers demand from the last year. Behind that amount it exists a huge difference made by the 10% less passengers for domestic flights and just 2% in the international ones. The cause is most probably the alternatives when need to cross the ocean.

A review done by the World Wildlife Fund, 23% of the Swedes answered that they refused traveling through the airplanes in the last year in order to bring atmospheric benefits. Out of them 6% are applying this mindset from a year before, so they can plan their trips accordingly. Around 18% of the respondents have been choosing to go via train in detriment of flying. (Timperly, 2019) A high rate of impact on all of these attitudes have Greta Thunberg as responsible, because she brought this essential topic on all channels in the eyes of the public. She even refused to fly to New York to address the importance of her cause to United Nations Climate Action Summit back in September. Instead, she took a 14-day sea voyage, becoming an example for all her followers once again, and a “hot” subject for all the TV news and Internet pages. (Milman, 2019)

The movement is also spread through campaignsj all over the world, with Flight Free 2020 one in UK, but also initiatives in Canada, Belgium, or Denmark. The Danish broadsheet newspaper Politiken has taken the initiative of stop the domestic flights done by its employees and plans to rethink how their trips can be accessed by trains. The German Airports Association, or ADV, also reported that November was the fourth straight month when a decline in commercial aircraft passenger numbers was observed, with approximately 12% than the previous one. A survey done by Union Bank of Switzerland where 6,000 people from Germany, France, UK and US were asked if the flight shame is influencing their choice, 21% of respondents answered that they have been reducing the number of flights over the last year. (BBC, 2019)

Another industry where a change is in progress is academia. Especially the climate scientists have been noted to be very active with their posts online about the effort of flying less in both cases of work or personal need. At the same time, a number of 650 academics are running a campaign to reduce flying substantially. One main representative of this group is Alice Larkin, a climate scientist at University of Manchester. She gave up flying long time ago, admits that institutions should change their tactics on how often their staff fly, and set the example for their students by reducing their carbon footprint. (Academic Flying, 2020)

A survey done by the consultancy company RSM Global shows that the term sustainability is likely to have an impact up to 37% on people's willingness to choose train over plains, compared with 20% just 18 months ago. (Gill, 2020)

How demand will evolve over a time period is understood as traffic forecasting. All methodologies available are strongly correlated with the circumstances and data available, either "globally-looking at the demand between nations, or specifically-demand between points".

3 The Current World of Transportation

3.1 Factors influencing the demand and purchases

Demand in transportation business can be defined as the number of passengers that want to travel using your service per unit of time. It is influenced by external factors and is critical to manufactures, airlines, airports and other institutions interested in aviation-related topics. Carriers use the demand models to better understand the travel behavior and which amount of passenger to expect, while airports need it as they have to design their infrastructure. In this paper, special emphasis is placed on finding if flight shame is one of the reasons that influence which mean of transport are people using while traveling.

The willingness to purchase an airplane ticket suggests the personal desire which is influenced by tastes and preferences. On contrary, if you do not want or like a transport method, you will not choose it over other means of traveling. However, interdependent essential factors are gender, country of origin, age, education level or usage of information and communication technologies. Boeing has its own list of reasons that influence demand, like economic drivers such as GPD and income; ease of traveling which accounts market regulations, changing structural travel impediments like visa restrictions and local market conditions, for example the domestic growth of airlines. (U. Kulge, 2017)

Holloway (Holloway, 2008)sustained that the two most effective aspects on demand are the price of the transportation and the personal income. In 2011, H. Zhang and M. Zhu (H. Zhang, 2011) researched through a causality test the elasticity of the total turnover of air transport in relationship with the GDP of China between years 1990-2009. Their study proves that in long term, the economic growth and civil aviation have a strong correlation. The statistics from Chinese respondents show that, since 2010, the number of passengers in air travel has been increasing with 105%, achieving currently 551 million people. That is not a surprise taking into consideration that the Chinese GDP grew with 111% over the same period.

Aviation companies are also doing research on the reasons for passenger demand fluctuations. InterVistas, which is a leading management consulting company which focus also on transportation and tourism, analyses how the changes in airfares affect the demand elasticity of people choosing to fly, withing Europe and worldwide. (InterVISTAS, 2007) Their results show that an increase in air transport demand is caused by a raise of income and if the ticket prices would grow, the demand will decrease. In 2013, the International

Air Transport Association (IATA) conducted a research to show that the wealthier the country, the more flights per year are done by individuals, as it can be observed also in Figure 2. (CAPA, 2014)

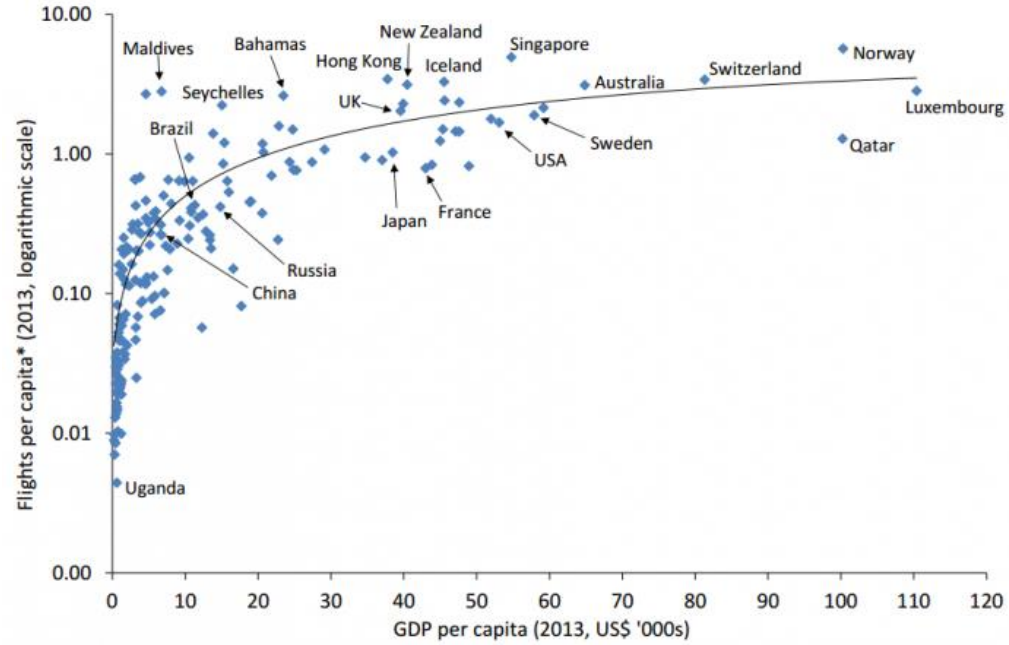

Figure 2. GPD growth and impact on flights per capita (IATA, Tourism Economics “Air Passenger Forecast)

On one hand, countries like Norway and Luxembourg have an average over two flights per capita per year, because they are prosperous. On the other hand, countries like Uganda have less than 1% of the population which flies at least once a year. Crowded regions as Brazil, Russia and China are under a continuous promising economic growth, which is why it is expected that the number of air passengers will double until 2035.

Furthermore, the fluctuation of demand is also influenced by the journey’s context, such as region (Europe vs Asia) or flight duration (short vs long). This regional heterogeneity has been analyzed by Chèze, Chevallier, and Gastineau (2011), by using dynamic panel-data models for eight different regions. The paper also supports the important of external shocks, jet-fuel price and GPD.

As a further matter, the demand for air travel is affected by the population size, because the need for mobility is increased in the wider areas. Hence, the number of citizens from a country plays an important role when estimating and differentiating the flight demand. A high share of demand will be generated just by the six largest countries in Europe-Germany, France, United Kingdom, Italy, Spain, and Poland. As shown in the Figure 3 below,

they gather around 70% of the population within the country sample.

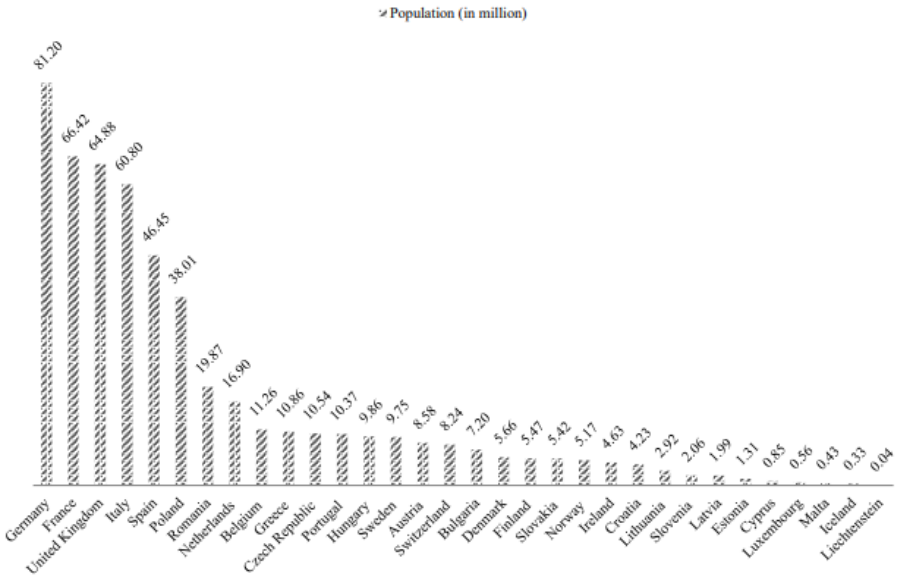

Figure 3. Population across selected European countries. (Eurostat, 2014b)

Definitely, a big player in what drives the tourism demand to travel especially by plane is the economic factor, income per capita. In addition, there is are a series of external influences that establish whether or not the purchase of the flying tickets will be bought. Through the results of the following research, there will be shown if climate change, and more precisely flight shame determines the number of passengers.

3.2 Accountability of traveling

Worldwide, at this point, there is no significant change coming from the travellers regarding being environmentally friendly while planning a trip, in the means of transport. This is the reason why the governmental disincentives like taxes and quotas seem to be a good alternative. However, the attempt to remove the environmental impact of civil aviation from the society with unconvincing measures such as taxation will increase the possibilities of economic impacts on society, especially to the ones that depend on tourists. This can be considered as a political and economical battleground, and will challenge the managers in the near future. (C. Ryan, 2000)

We can anticipate a scenario is that the companies that fight against high polluting actions will be rewarded with carbon-credits on a digital platform by law. That would not be truly fair because it would influence the public opinion. The demand will be driven away from the countries where aircrafts that cannot afford to keep up with this trend operate.

The real question when analysing the relationship between climate change and air transport industry is if there will be needed legislative interventions which will force to limit the public usage, or freedom as it can be considered, of flying? The first step into that direction is to oblige the short-haul travellers to choose ground means of transport. As an example, for a specific route between two metropolises that are also connected by high-speed rail, which has been proved to have the benefits our climate needs, traveling by airplanes can be forbidden.

Meanwhile, in the countries that are less developed but economically successful, the demand of outbound flying is quickly raising. Will they see the imposed constraint fair? They do not expect that they must apply new rules that were not available for better-off nations, and it will be difficult to accept the situation. Through the survey conducted, it will be analyzed which solution do customers prefer the most in order to strike the balance between the environmental impact of flying and the growing demand of air transport.

3.3 Rail transport as a substitutive of air transport

Instead of flying, the flight-shame sympathizers suggest opting for an, often neglected mean of transport, the railways. Because of the efficiency demonstrated by railways regarding their pollution level, it was affirmed that the “global transport emission could peak in the 2030s if railways are “aggressively” expanded. (IEA) The thrive of reaching low amount of carbon emissions will be encouraged if tourism industry’s focus switches to trains.

IEA new report which focus on the substantial benefits that rail brings to greenhouse gas emissions, congestions, and air pollution, compared to airlines. They used six charts in order to show the opportunities offered for today and future world. Further analysis will be made concerning how could these aspects influence the future air tourism demand.

The first one proves the attractiveness of rail transport in in terms of energy-efficiency. It mentioned that at a global level, three-quarters of rail passenger movements and half of rail freight relies on electricity. Below, in Figure 1, it is presented in comparison with other means of transport, to show the huge difference between rail and other possible options to travel. (International Energy Agency, 2019)

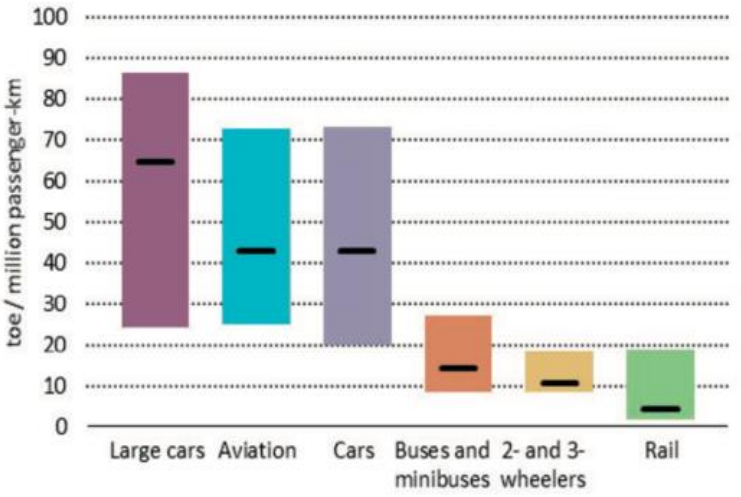

Figure 4. Energy intensity of different transport modes in 2017. (International Energy Agency, 2019, p. 51)

As shown in the Figure 4, the rail accounts for around 8% of the world's passengers' movements and 7% of cargo transport, while it uses just 2% of the world's transport demand. The global rail demand is quite the same over the last 20 years, with a small fall in Europe and Japan, a raise in Russia, China and India, and constant values in North America. On the other side is the aviation industry, that significantly grows year by year. However, the quantity of oil tones consumed per one million of passenger that are traveling one km is three times more than the one used by train. This shows how much the time-efficiency of the mean of transport matters among tourists.

Also, there is a regional difference between the energy-efficiency level of each country rail network. Mainly this is a result of lower occupancy, as presented in the chart from Figure 5.

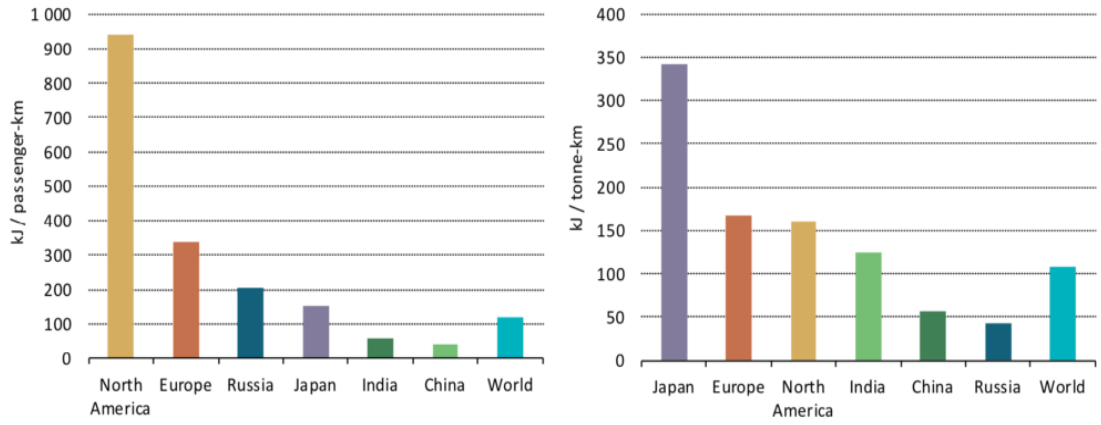

Figure 5. Energy intensities of passenger (left) and freight (right) rail in 2016. (International Energy Agency, 2019, p. 100)

Korea is the leading country in the share of track electrification with around 85%, followed by Japan, China, Russia. In Europe, railways are around 60% electrified. On the opposite side, in North and South America, both have less than 5% rail electrification. Railway needs a lot of improvement to be as efficient as customers would expect in order to prefer traveling by train. It can be expected that the future flight demand will have the declining points from the locations such as Korea or Japan, where investments in improving the quality of railways are done.

Today, around 600 billion passenger-km are traveling by high-speed rail yearly, compared with just 100 billion passenger-km in 2000. This type of urban rail networks boomed especially in China, Europe and Japan, as the figure 6 shows.

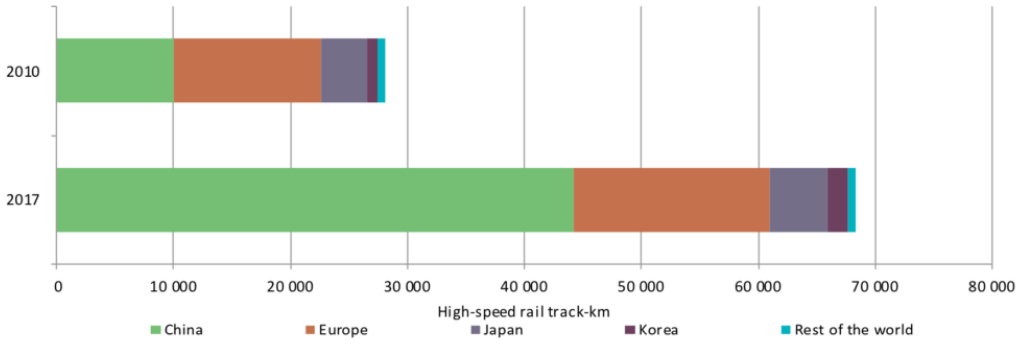

Figure 6. High-speed rail track length in key regions in 2010 and 2017. (International Energy Agency, 2019, p. 31)

The enormous importance of high-speed rail is because it offers an appealing low-carbon alternative to short-distance flights. IEA affirms that if designed with comfort and reliability as key performance criteria, high-speed rail can provide an attractive, low-emissions substitute to flying. (International Energy Agency, 2019) The development of high-speed rail in the past years is just a tip to show the direction of the next centuries. The competition is getting tighter and tighter if the aviation industry will not bring innovations at least appealing to the customers. If the traveling time will become alike between trains and airplanes, the winner of the competition will be decided based on the price. Until now, the operating costs are higher for the aviation industry, so they must keep the competitive attitude strong.

Factors that influence the impact of the high-speed rail lines on greenhouse gasses emissions are such as passenger behavior and operational practices, but overall, IEA say they can produce an ”almost immediate net CO2 benefits” just by reducing air journeys

with approximately 80% on some routes. (International Energy Agency, 2019) The chart from Figure 7 shows the changes in passenger activity on specific air routes after the opening of high-speed rail lines.

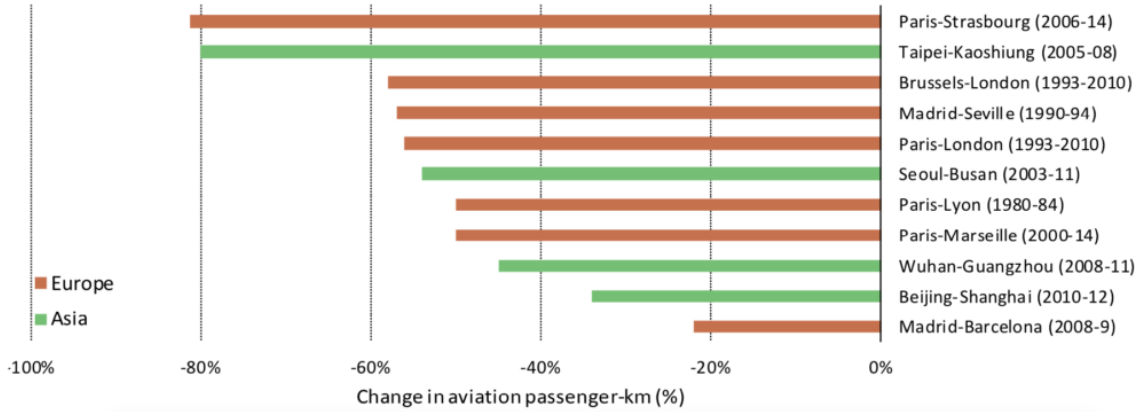

Figure 7.Average change in passenger activity on selected air routes after high-speed rail implementation. (International Energy Agency, 2019, p. 99)

For example, the presence of the Paris-London Eurostar cut the number of passengers that would fly this route by more than half in just 17 years. Aviation industry must react immediately to this change. However, the market have been moving from Europe to Asia because the middle class is growing and more people have access to traveling. But this will not last forever, and the customer sector will stagnate from increasing at some point. Long-term solution must be prepared while major improvements are done. It should be taken into consideration also that more high-speed rails will be built between frequented routes while customers will be influenced by climate change situation or legislative decisions forcing them to use train instead of planes. Creating a proper detailed surviving plan for the next centuries is essential for assuring a place in the future business of traveling.

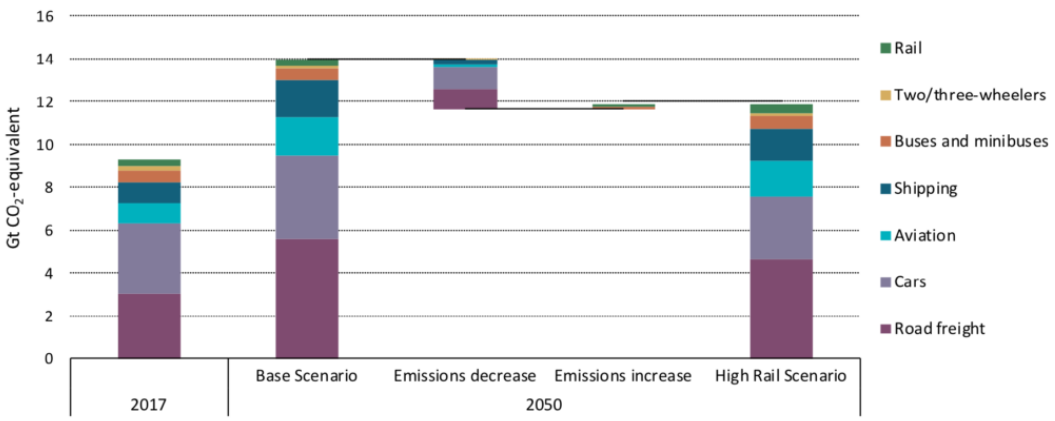

Figure 8. Well-to-wheel GHG emissions from transport in the IEA's base and high-rail scenarios. (International Energy Agency, 2019, p. 54)

The future of rail expansion is given by IEA through two scenarios that are might occur. They involve and aim cutting emissions, and the results are shown above in the Figure 8 (International Energy Agency, 2019, p. 69).

The first one has been named the Base Scenario, and it proposes that rail will not expand worldwide more than what is currently doing to maintain the competition against cars and air travel. This assumes that we will not see any innovation in its policymaking. The infrastructure investments will raise by $330bn until 2050 and the global track length will expand by 2,5 times. This is not a favorable situation for the environment because the global transport emissions would continue to grow constantly. In this case, the demand for flights will not stop from expanding. (International Energy Agency, 2019, p. 16)

The second one, the high-rail scenario, suggests that by 2050 the annual investment will increase to $770bn and the lengths will achieve a four-fold raise. The number of passengers that would choose rail is with 60% higher than in the first case. This brings a huge problem for the aviation industry, which must find alternatives to remain a big player in the traveling sector. (International Energy Agency, 2019, p. 17)

Significant policy-making decisions will be taken in order to encourage the rail travel. One of them aims to reduce the costs of traveling by maximizing the rail network usage and by removing technical barriers. Secondly, they will concentrate on raising the rail revenues, by capitalising the increased value brought by the expansion of rail to properties and businesses. Also, a set of laws that would force all the forms of transport to pay for the environmental impact caused would be in the favour of train expansion. By combining these policies, the level of greenhouse gases globally would decrease to 0.6 GtCO2e per year than in the "Base Scenario", that is almost the quantity of South Korea annual emissions. (International Energy Agency, 2019, p. 20)

Both scenarios are achievable, but the second one is more ambitious. It is up to the international railways industry across national governments if they can work together to develop strategies and then apply them, so the rail sector continues to retain its energy efficiency status. In our research, we will try to answer the problem of what would make people choose traveling by train in detriment of a flight and analyse to which extent are the desires ready to be fulfilled.

4 Forecasting

In a case of minimalizing the difference between the expected and actual demand for a service, an essential role plays forecasting. In order to facilitate an accurate infrastructure of railways for the future needed capacity and to avoid either an insufficient or wasteful one, the anticipation of the demand must be done years in advance. The same applies for the workforce that has to be trained in advance or where there is a need of building train stations or airports that support the business operations. The tourism product development is strongly influenced by these aspects, so it is essential to include forecasting as a management tool when developing the industry.

4.1 Objectives of forecasts

For tourism, it is necessary to match the supply and demand because of the perishability of the tourism products, such as unused capacity. This will result as a loss of revenue that will not be recovered later, because it is impossible to store it. However, the unpredictable demand within tourism makes it difficult to conclude with an accurate forecast, mainly because the future tourists are likely to become even more unforeseeable. Therefore, the role of forecasting in tourism management has been adopted by both private and public sector. The contribution that a valuable forecast could bring has not reached its full potential because of the wrong approach which was been followed. This means there was not applied a combination of methodologies that would help the forecast to reach a conclusion. The decisions taken based on these methodologies should be revised many times beforehand. The data which already exists, and the circumstances of forecasting are two variables and the methods can be applied either for the demand between nations (globally) or demand between specific points. (Hirst, 2008, p. 5)

A good example of understanding of what is the objective that the tourism demand forecasting is aiming, is given by Archer (1994, in Douglas C. Frechtling, 2001) as “predict the most probable level of demand that is likely to occur in the light of known circumstances or, when alternative policies are proposed, to show what different levels of demand may be achieved “ .

4.2 The importance of tourism demand forecasting

All the businesses that are interested in the success of the whole cluster that form the tourism industry want to reduce the possibility that their desired objectives will fail to be

achieved. This applies for hotels, restaurant, means of transport, travel agents and even the government. One relevant way to make sure the risks are reduced is by making a clear statement of how the future will look like in terms of customer demand.

Compared with other industries that must take risk reduction into consideration, the tourism one should pay more attention to it. One reason is because of the perishable character of tourism product. The best example is given by airlines, where the opportunity to get revenue from an unsold seat disappears once the airplane is ready to flight. To avoid the unsold inventory or the matching to cope with the demand, anticipation is a must. Another reason is the consumption of the tourism product which takes place almost at the same time as its production. This process is done through customer service offer by supplier via flight attendants. The right amount of available personnel in the right place needs to be known in advance. The third one is represented by the interdependency of hotels, services provided by airlines and other means of transport, the quality of entertainment and other activities. They all work in the same direction to raise the customer satisfaction. If one of the complementary services is not meeting the visitor expectations, then all the providers will suffer. Therefore, forecasting can ensure the availability of the complementary services. (Frechtling, 2001, p. 6)

A fourth reason is the sensitive aspect of leisure tourism demand influenced by either natural or human-made disasters. Mostly all these holidays are driven by the willingness to stay away from the stress created by the everyday environment. If war or extreme weather conditions occur, the leisure travelers would stop visiting the countries that suffer or even traveling in general until the situation returns to normal. Forecasting those events and how will they affect the tourism demand will help reducing the impacts on the tourism-related sales, income, employment, and tax revenue of a place. Lastly, because of the equipment and infrastructure of tourism suppliers, they must now long time before how to plan their investments. Imagine that a hotel can take up to five years from the concept stage to the actual opening. For an airport, all the planning and construction might take even a decade, and for an airplane the time to produce and deliver it can be five years. Forecasting is essential to anticipate the future demand accordingly, so the unnecessary costs are avoided, and the right capacity is fulfilled. (Frechtling, 2001, p. 6)

4.3 Alternatives views of the future

According to Berstein (1996, in Frechtling, 2001, 7), we should be conscious of two extremes that are on the verge to happen in the future, as shown in Table 2. One of them is

the event which has 100% probability to occur and which is easy to be predicted. For tourism, there are this kind of scenarios available. They can be that for example in Europe, tomorrow, there will be for sure one person that will travel or that more than one hotel will have their rooms booked. These events that are sure to happen have two main common aspects: they are easy to be forecasted accurately and they are, in big picture, ineffective for tourism management. They are too insignificant to make a change and at the same time, no change could stop their occurrence.

Table 2. Three views of the future (Frechtling, 2001)

1. Predictable - unalterable -implies that forecasts are useless	2 Unpredictable -random - forecasts are impossible	3. Predictable and alterable - forecasts are useful and feasible

An important contribution to this theory was done by the physicist Wener Heisenberg in 1920s when he funded the “uncertainty principle”. He demonstrated that determining both the position and the moment of a particle at the same time is not possible, but we can use probabilities for each. According to Paulos (1992, in Frechtling, 2001, 8) this means that there is no theory that can be the base of forecasting tourism future precisely.

The other extreme is composed of the events which are possible to occur and have the same chances of probability. In tourism, the gender of the next customer is totally random in the most cases. In these circumstances, forecasting with a high rate of accuracy is impossible. However, there is hope in tourism industry forecasting because future events that require considerable changes are quite predictable together with the factors that influence them. That suggests the importance of predicting actions that can have an occurrence rate greater than zero and as closer as possible to 100%.

The fact that it is possible to predict enough of the future to select which actions to take in order to shape it based on our preferences gives hope to tourism managers. This possibility is also known as inventing the future, and it is mainly based on checking the past. That means forecasting becomes a way to organize past information of a phenomenon to deduce the chances of that event to occur in the future.

As the New Shorter Oxford English Dictionary (Brown, 1993) states, a phenomenon can be defined as “A fact or event that appears or is perceived by one of the senses or by the

mind". Thus, there are many ways how we can organize the past data about a phenomenon. One of them is to "manipulate objective, qualitative data by mathematical rules", and another is to "analyse the opinions of experts about the phenomenon, past and future". The second option is valid in this thesis' survey, as the influence of Flight Shame on consumer perspective about flying will be studied to anticipate possible scenarios regarding transportation sector.

4.4 Uses of tourism demand forecasts

Managers and marketers pay attention and are interested in tourism demand forecasts mainly to reduce the decisions risk level, but they also have individual reasons Companies are using tourism demand forecast to calculate the needs to operate their businesses, like staff, supplies or room capacity. They also use forecasting as a tool to analyse the feasibility of a project, such as the profitability of entering flights to a new destination. (Frechtling, 2001)

Another group that are using tourism demand forecast are planners and public agencies, such as Destination Management Organizations. Their business is affected by the consequences the visitors have on the economic and socio-cultural environment. Also, the tourism impact on price regulations should be anticipated while planning the budgeting process of a destination. All the utilities that assure an adequate level of needs for the customer, like infrastructure- airports, bridges, high-ways, and energy, must be anticipated enough time before the season starts. If the right decisions are taken, the costs of attracting and serving the customers will be minimized. (Frechtling, 2001, p. 10)

Bernstein (1996, Frechtling, 2001, 22.) affirmed that "The successful business executive is a forecaster first: purchasing, producing, marketing, pricing and organizing all follow". This means it would be impossible to imagine how the tourism industry would look nowadays if there was no forecast to suggest how to cope with the risks while saving money and how to invest them furtherer.

5 Research Methodology

5.1 Selection and justification of the research method

This thesis aim to conduct a research in Helsinki area that will analyze to which extent are the Flight Shame phenomenon and its implication affecting the aviation business. The results received will help in forecasting three possible scenarios that have chances to become real. There are two major categories that we can divide business forecasting methods including the tourism ones into: quantitative and qualitative.

The first one use mathematical rules for organizing past data about a phenomenon. The requirements are basically the existence of objective numerical measurers that has been gather over a period. Quantitative methods are based on the possibility of reoccuring of past patterns, and propose the future based on cause-and-effect relationship. This side is important in some forecasting situations, for example when the business owner wants to know the approximate customer increase rate their increased advertising budget has

The qualitative methods, also known as judgemental methods or subjective forecasting, are using expert's opinion about the past information of the forecast available in order to predict the future, instead of using mathematical rules. Qualitative methods function base on the experience or judgement of people that are assumed to have a knowledge in the studied subject. The expert, is the one who processes the data compared with a computer which would be used in a quantitative forecasting. (Frechtling, 2001, p. 20) In this thesis, it would have been impossible to analyze my results based on a quantitative method, because there are no consistent surveys about flight shame that were done previously. Therefore, conducting the forecast through a qualitative method is suitable, because I will not estimate the values for the studies but more suggest improvements for a brighter future of tourism.

In the survey I am conducting, the conclusion regarding how high is the probability for the airlines demand to be affected by flight shame can be easily achieved using a qualitative method. The main reason is that there are no sufficient past data to gather and analyze that can conclude with a valid forecast. Flight shame is still a new topic that will probably come in the attention of the travelers in the future period. The most current example on how a quantitative model have been ineffective in its accuracy to preview the fall of aviation industry as long as all tourism once the spread of COVID-19 has been done. While the spread of the pandemic happened fast, most macro-environmental changes

may be slow and their negative results on tourism industry can be seen in years: in this case climate change. Therefore, a qualitative method would be more appropriate to provide a reliable forecast with whom managers can plan different scenarios of the future.

However, there are advantages and disadvantages of using qualitative forecast methods. On one hand, the positive side is that they do not require a high investment of money for reaching the answers. Besides that, a high knowledge of statistical skills is not required, which also helped me because I have no rich background in gathering and comparing statistics. On the other hand, because the chosen judges might miss some skills in expertise can become a changing factor for the accuracy of the forecast. Also, they can misunderstand they desires for the future based on their actual predisposition instead of seeing that actual changes that can happen. More than these, there is no rule that a judge must follow so they do not put their own perspective and it is totally objective, like in a scenario where quantitative method was used. (Frechtling, 2001, p. 212)

5.2 The research process model

There are four main qualitative models that can be applied in the tourism industry: Jury of executive opinion, subjective probability assessment, Delphi method and consumer intention survey. These four methods are reproofing the proverb which suggests that “plans fail for lack of counsel, but with many advisers they succeed”. (Proverbs: 15:22, New International Version). The difference between the methods are from how you select the judges, to what informations are presented while asking the questions, how you interact with them during the process and how the results are processed to reach the forecast. (Frechtling, 2001, p. 210)

The one that has been found the most suitable for achieving the purpose of the thesis is the last out of them, the consumer intentions survey. This alternative gives the possibility to directly ask the source of the demand itself. Asking the ones who are actually purchasing the tickets and making the trips might become more advantageous than asking experts in the field. Furthermore, the intention survey is the most useful tool in this case because of its potential to gather enough responses that are equivalent to a population’s opinion, so generalizing the future behavior of the customers becomes easier.

The qualitative forecasting methods are usually following a four-step process to reach their purposes, which are:

1. Selecting the judges
2. Pose the questions to the judges
3. Ask for answers

4. Obtain forecast

The first step of the process in consumer intention survey is to select the judges. The procedure is firstly to define the consumers in general, then to create a way to divide the most representative ones from the other and finally to select that sample. The second step is to pose the questions to the judges through the most appropriate channels. The following action is to ask for responses by stimulating the implication, receive the answers and process them. The last phase is to obtain the forecasts, generalize the responses and turn them into facts about the customers that will travel in the next few years. The after forecast phase is to compare them with past experiences that have been gathered through other related surveys and analyze the relationship between their past intentions and the actual future behavior.

During this process, I considered important the recommendations given by Armstrong (1985: 147-9) which aim to improve the accuracy of the consumer intention forecasting method that can apply on tourism demand too. To open with, I tried not to select judges that have a personal implication for the situation that was forecasting, for example environment activists, so there were no extreme opinions involved. Then, when creating the questions, I had to pay extra-attention to the way the question is written so all the judges would understand in the same way my intention. This meant, when needed, to put a bit background information about the topic or the question in an easy-to-understand manner. On obtaining the forecast, I had to prevent the interactions between me and respondents or between the judges, so no one could influence each other's answers.

5.3 Building the questionnaire and the survey

In this thesis, the respondents were people living in the Helsinki area. Mostly all the people met during recent years were through the degree program I am studying, which is strongly correlated to tourism, so it was supposed they already have minimum knowledge in the field. If they were outside this group of people, opinion of regular travelers that are not really interested in what is happening in the background of the industry matters enormously.

This process involve also researches on other available thesis with related subject as mine, so I would make sure I will not ask questions that have already been answered. Also, all the related information gathered about Flight Shame which were presented in the theoretical framework inspired me in creating and designing the questions. Then making the list of questions should must have been attentively built so that the respondent would

not feel pressure while completing it and actually enjoy doing it, while providing me the information needed for a clear conclusion. The final survey ended up with 19 carefully worded questions, where respondents had either to choose between many options, write their own answer, or express their thoughts on a scale from 1 to 5.

Firstly, they could be categorized as Generation being 24 years or less, millennials, or Generation Y which are currently between 25 and 39 years old, the ones between 40 and 54 years old, which is Generation X, and lastly, Baby Boomer from 50 to 75 years old. The aim was to reach at least 100 respondents, coming from all the groups of ages, in less than two weeks from the moment I will spread the online survey.

Then, the next three questions (questions 2-4) were to get to know the relationship between the judges and their traveling habit. If they would not had been tourists in the past year, then their vision might be from a third or objective point of view. For a valid opinion, they must belong to the group of people that travel. The next thing I found useful for the behavior analysis was to see which mean of transport did they chose and why, so a short historical basis of past actions is done (question 5). Furthermore, the next few questions (questions 6 & 7) are based of the understanding of the judges of the Flight Shame phenomenon and what it promotes, using scales from 1 to 5, where 0 is “never thought about it”, 5 is “Conscious about the CO2 used” and between them is 3 with “Known its existence”. However, although some of us could consider that is a well-known and already spread worldwide topic, the question 6: “Have you heard about the Flight Shame phenomenon” has to be asked to prove real facts. The judges are from Finland, which is close to Sweden- the starting point of the phenomenon, so it would be expected that more people would know about it compared to other countries. The next question is not really related to the previous one because I asked them to describe me in few words the Flight Shame, considering that the name is giving enough suggestions of how they would describe it.

On the eighth question I tried to see on a scale 1 (not ashamed at all) to 5 (very guilty), how ashamed in terms of their environmental impact are the judges when they travel with the available means of transport: airplane, bus, car, ship and train. Then, because Flight Shame is an online movement which depends on the spread of the word via online channels, I found appropriate to ask to which extent do the judges care about the carbon footprint the mean of transport is causing, if their friends would promote a better alternative. To complete the image of the importance level of communities created on the internet, the judges were asked in 10th question if they would follow a trend that suggests choosing train while traveling.

Because Flight Shame is encouraging travelers to choose train in detriment of flying, interested was focused on what would make the judges to switch from flights. Considering that the time spend to arrive at the destinations is crucial, I also wondered in the question 12 if they would book a sit in a train although it takes more but it has benefits on the climate change. After that, a more detailed and clearer example was presented in 13th question. A direct flight from Helsinki to Bucharest lasts 2 and a half hours. The question is how much extra traveling time they accept to be environmentally friendly.

Based on the previous questions which are based on past behavior or present thoughts, it is important to see what the perspective of the judges about their future trips is. So, the question 14 was a slider concerning the level of influence of climate change situation on the means of transport chosen. In future scenarios, the price of the tickets still plays an important role, so attention was also distributed in 15th question to the willingness of the judges to pay extra for a transport ticket if it would be more environmentally-friendly, and the actual amount.

A practical perspective to collect is which is the mass opinion about who should take the responsibility of solving the problem of transport emissions. Is it the government, the business representatives, the customers, or who? Also, which solutions should the parties involved take was found beneficial for the forecast. This is the reason why the 16th question is related to other changes that consumers would prefer or agree to. A difference between what must be done and what will be done in real life, exists.

Finally, some people would not even think about climate in their leisure time. It has been considered that after the survey because the subject has been brought into discussion, their thoughts might change. This is the reason why the last questions (17-18) sound like promises they would make to themselves, if they will apply their future traveling plans accordingly to what Flight Shame promotes.

The tool through which the questions have been made is specialized in conducting surveys and report the answers and it is called Webropol. The website also served as the channel used by the judges to respond to the questions. The process itself is made easier by the tool because they offer different kind of options to choose which type of question fits your purpose. Mine was that people will not spend a huge amount of time responding to the survey, because in general they will just skip questions or even surrender to answer. This is why in many cases I gave them the options and the judges had to choose which one of them find the most suitable for their opinions. However, there are some cases in which more than one answer might be available. All these ”selection” questions

did have a blanc space called named ”Other”, where the judges could complete with their different personal view that I maybe not saw as an option.

Furthermore, because the point of view was that the variety matters so the respondents will not see just one type of question, it was also added the possibility of dragging a slider to measure how much they agree on some facts. This brings more interactivity between the judges and the survey and it makes it more pleasant to be completed. The same effect has the question where they have to pick from 1 to 10 the numeric value that express the most their thoughts.

The channels used to spread the survey and ask for answers was virtually, through social media, mainly on WhatsApp groups and Facebook Messenger. Because the judges were mainly people that can be considered my friends, which I know from school, those are the most important channels to reach them. A young adult will rather be contacted through social media rather than email. WhatsApp is mainly used because of the possibility of creating groups of people based on their phone number, and almost every class or group from school has their own WhatsApp group to communicate the tasks. That is the place where I could reach the most of my respondents. Facebook Messenger was the tool used to spread the survey individually to people that I know and might be interested in giving me their point of view about the Flight Shame situation. The link from webropolsurveys was followed by a short text explaining who I am and the reason why I encourage them to answer.

The given time-period to response was firstly one week starting with March 30th 2020 until April 7th 2020. A problem occurred because of the little number of participants, so it was decided to extend the period to one more week, until April 14th 2020. After it was realized that there are needed more people to answer, messages were sent to them again with an update that there are still seven days to complete it and gently ask for taking action. It was also asked for the ones who already responded to forward the message to other people that they think might have the time to be a part of the process.

5.4 Data Results

The aim for a clear image in the end was to have 100 respondents. However, during the two weeks of having the survey opened for the public, I managed to gather 83 answers, which can be considered a promising start on a journey that will analyze the future of air travel demand.

Answer for questions 1-5: The relationship with traveling

Out of all the respondents, Generation Z, has been the most active on the survey, accumulating around 71%. The next group was of Millenials, 28%, followed by one person that is between 40 and sadly, no Baby Boomer has been participating in the collection of data. This is mainly because of the connections I had to be able to spread the survey, which are mainly young adults and few older people. Thus, the results will help us analyze mainly a small fractions of the future behavior of people under 39 years old.

Then, the highest percentage (42%) affirmed that they travelled two or three times, followed by ”more than three times” with just one person difference. The rest of 17% of the judges travelled once. This is a happy case where no one said that they have never travelled in the past year. The transportation winner, as shown in Figure 1, were airplanes with 72%, followed by car with 13%, train 12%. Traveling by bus or by ship got the same number of respondents-1.

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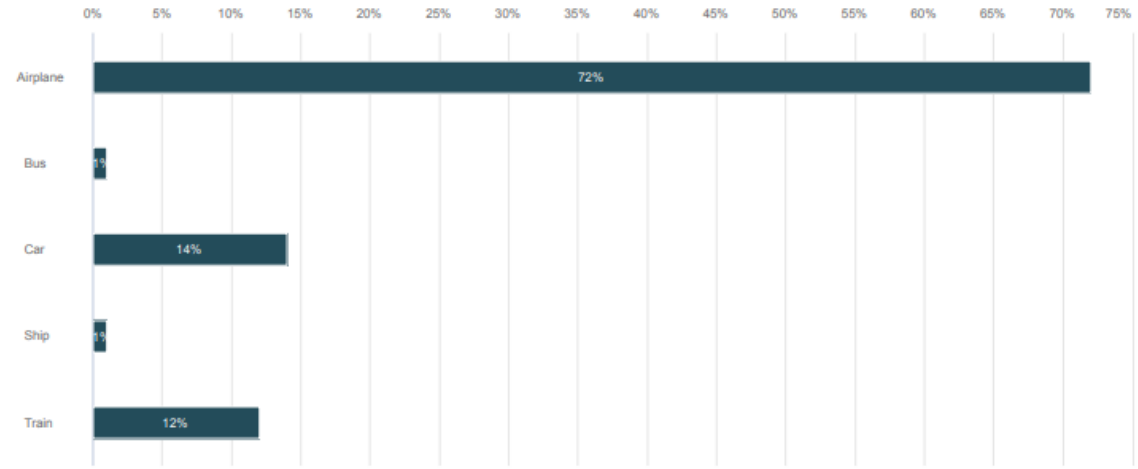


Figure 1. The means of transport used when traveling (n=83)

So, until now, it is clear the the aviation demand is the highest among the people that traveled in the past year, but why? Well, it seems like the majority, meaning 61%, choose their mean of transport because of the time efficiency. However, the second reason is the price of the tickets, then the pleasant time they spend on the road. The reason that occurred the most is that flying was the only option to travel from Finland to their destinations.

Answers for question 6-10: The importance of Flight Shame

On question 6, considering a scale from 1 to 5 to express how aware are the judges of their environmental impact while traveling, the majority choose the average with 30%. The following places are occupied by the values four and five, with 28% and 20%, which gives us a promising starting viewpoint of the future customer behavior. Two of 83 respondents

answered that they have never thought about the environment before their trips. As time as this value will not be equal to 0, it can be a concerning challenge for Flight Shame activists.

Furthermore, 42% of respondents did not know what Flight Shame is about, 36% did, and 22% are not even sure. The answers received for question regarding the description of the phenomenon are more than pertinent than expected, and if they would be summed, a complete description of the phenomenon can be done. One fine short answer that I have to mention, and it is absolutely true is “underrated”. The main content included answers such as an eco-friendly movement suggesting that people should feel bad about the pollution made from traveling by plane and try to switch to different alternatives.

In terms of how guilty the respondents are feeling on their transportation choice, the top response was the value number one representing “Not at all”, followed gradually by the rest of them. The highest percentage, 42% answered “I do not know” when asked to which extent they will be influenced by online channels when choosing how to travel, which shows the lack of people promoting Flight Shame. However, the rest of them pointed out that they would feel either embarrassed (33%) or on the other pole, careless (23%). The percentages are similar to each other when talking about following trends, but the winner is the value 4, with 22%, which means a quarter of them would actively promote what Flight Shame does. It depends on its popularity. However, 16% can be considered a high percentage for people that will not be interested at all in it.

Answers for questions 11-15: Transportation methods

The most preferred measure that must be taken so travelers would choose train instead of flying, with 77%, was the most expected one, to become more time efficient. Also, important for travelers is to have more connections between destinations. Another factor that seems to need improvement is the comfort from the interior of the trains. On the other side, the promotion of more traveling packages and extra-services on the road do not matter that much for future tourists. Subsequently, just 37% of them responded affirmative to spend more time to arrive at their destinations. Most of them 50% picked “Maybe”, which gives a bit of hope, but it depends on the environment friendly. Figure 2 shows that for the ones that would do it, for the Helsinki-Bucharest example, the winning answer with 31 votes is the smallest amount, maximum two hours. The number of votes declines as the number of hours increase, and just 8 people would spend more than 8 hours traveling. After the survey, I receive feedbacks that they would want to, but they are working and the holidays are limited so they try to minimize the actual journey in detriment of activities at destinations.

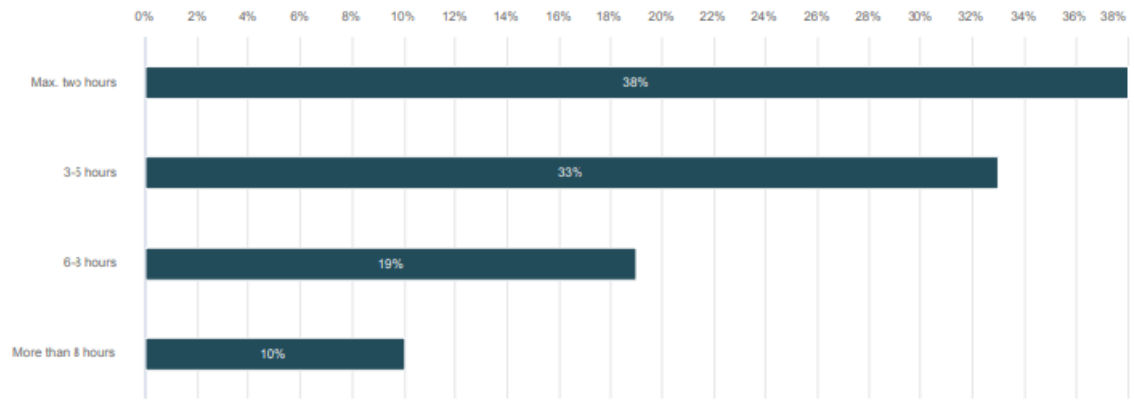


Figure 2. Amount of extra hours added to the traveling time with train instead a 2 ½ flight (n=83)

For question 15, ”How much will the climate change situation influence the means of transport you will chose in your future trips?” , the most picked values are three (36%) and 4 (32%), which means that it will be taken into consideration, but it will not be the topic that influences the most their trip. Only 12 people (16%) are affirming that climate change will count as the driving factor. If this percentage would raise at a global level, the future might be brighter than we expect. Related to the price of the tickets, majority (42%) consider that they would pay extra sometimes. In terms of how much would they pay, 23% of respondents are willing to go with more 10% on top of their basic ticket and 27% less than 10%. Still, there are people who would not adopt this in the future trips.

Answers for questions 16-19: Environmental accountability

In half of the respondent’s eye, the government is the one in charge solving the problem of transportation emissions, followed by the business representatives and tourism industry. However, the extra answers judges added suggest that both of them should make a team with their customers and with the environmental organizations and form a team where everyone understand the changes that must be done and then act accordingly. If only the government would step in and start to make the changes, legislation might limit the usage of flying on specific routes that are connected by high-speed rail. When asked if they would agree with it, 63% considered it as the best solution. A quarter of them considered that people have to change their behavior without legislative intervention. Eleven percent of the judges consider that this decision depends on other things, such as how strict the limitation will be done. The perspective that must be take into consideration when making decisions is that if individuals could just travel as many times as they want if they have enough money.

Judges' favorite solution for the dangerous growth of demand of air transport in relationship with its environmental impact, with 55 votes is related exactly to themselves, considering that people in general should fly less when train is an option available. Thirty-nine people consider that airlines should pay extra fees for their negative effects on environment. Another possible change that was appealing to the judges is that the number of flights should be limited per unit of time. Twelve people find a good solution that the costs of the tickets should be tailor made on the income. However, 7% of the respondents answered that it is already too late for a change. The suggestions included the need of making airlines to be vocal about their impacts so customers would know or making the train tickets cheaper, as now many times it might be more expensive to use a train compared to flying.

The end of the survey resulted with 15 of respondents who claimed that they are willing to change their traveling habits to reduce the damage caused to the environment. I can consider it as a promise. There are high chances that they will remember next time when a trip is planned what was affirmed. However, more than half of the people, 46, do not feel like introducing a traveling lifestyle that will make our Planet suffer less. Twenty-one of them are passive, so there is still a chance to advertise the right content so at least some will switch to the right side.

6 Analysis and premonition

6.1 General outcome from the results

Considering that the purpose of the survey was to discover to which extent flight shame is influencing consumers preferences for the transportation use when going in a trip, it can be admitted that the results were quite predictable. A high percentage of the respondents have not even heard about the phenomenon and its implications. It was expected that the favorite transportation method in the past years was by airplane, while train is on 3rd place. Few people showed their disgrace of flying or said they chose the most safe way of travel. Often it is misunderstood that the aviation industry is not a safe one. The theoretical framework before doing the survey was suggesting that the behavior of majority is influenced by the price, but it seems like it was wrong and travellers evaluate time as being more important than money.

However, some people acknowledge the carbon footprint of flights, but there are a variety of valid reasons which support people to still use them in the future. At the moment, based on the results of the survey, travelers under the age of 39 who are residents of Helsinki do not have any guilty feeling when they travel. Although in the recent years the situation of climate change has grown as an influencing decision factor, resulting in the Flight Free initiatives brought in UK, Canada, Belgium and Denmark or from the surveys done by Union Bank of Switzerland and RSM Global, which were mentioned in the theoretical framework, the same promising attitude would not apply for Helsinki yet .

Results show that they would not feel like considering it even though Flight Shame would be promoted more aggressively on social media. Even if their friends would actively remind the benefits of traveling by train or by ship, almost a fourth of respondents would still feel careless. Many answers regarding future behavior are under the question mark because it is difficult to imagine how we will actually act because of all the extern influencing factors. People might stay more time on the road if the law will say so. They would pay extra money sometimes on top of their tickets to reduce the emissions, but not that much. Customers would consider what Flight Shame is promoting, but it really depends on how the situation of climate change in the future will look like. The first target of the research was to analyze the influence of Flight Shame itself on the future aviation demand in Helsinki, which is not powerful at all. But the concepts about traveling which are promoted by the phenomenon might become important for some passengers. The number of these travelers will be strongly influenced on how the climate situation evolve, investments that will be done, government attitude and technological breakthroughs.

There are three categories: the ones who will be actively trying to reduce their carbon footprint, the ones who do not care at all, and the biggest one is formed by the ones who have no side. Usually, a phenomenon that develops into a movement as Flight Shame, needs strong leadership that can attract the mass of people which do not know what path to choose yet. However, the thesis will continue with three possible scenarios that could occur in the tourism business during the next centuries: one where flight shame expands; the other one when everyone forgets about the topic and the third one where nothing will change. They have been built considering the qualitative forecasting literature I have studied, and they represent the second target of my thesis. Because there are no previous surveys conducted in Helsinki related to Flight Shame, the predictions are done by considering just the responses from my research, in tandem with the IEA ones presented in the framework. A level of common sense was used to develop the scenarios.

6.2 Scenario I – The rail ticket to future

The first case is appealing for the railway industry and the worldwide climate situation but is affecting the future demand for flights. It is involving the “high-rail scenario” mentioned earlier in the thesis, where the annual investment of high-speed railways will double by 2050. The sales are expected to see a four-fold raise, and that means around 2.4 billion people will become frequent railways users.

The country that will first reach the biggest decrease of flights will be Sweden, the focal point of Flight Shame campaigns. The spread of articles regarding it on media channels will raise enormously, and every daily news and posts will include facts and encouragements of not flying and choose train when possible. The change then will move forward to the other Nordic Countries, which will face a dramatic fall in the domestic flights for the start, and then to the main routes that can be done efficiently by train. If at the moment, in Helsinki, just 12% of respondents affirmed that they would change future traveling behavior in order to be environmentally friendly. This percentage is expected to increase to 50% by 2050. Future customers of tourism industry will think wisely before planning their trip by calculating the amount of emissions caused by their holiday and try to minimize it. Flight Shame movement will be a trend that became normality. From Helsinki, there is just one existing high-speed rail to Saint Petersburg. It is expected that the plan to make underwater tunnel to arrive in Tallinn will become a priority for the authorities. In this way, to project of Rail Baltica, which also covers Latvia, Lithuania, and Poland, will be finished and the rail traffic between these countries will be preponderant in detriment of flights.

In any scenario, aircraft manufacturers, airlines, airports, and air traffic service providers will put together initiatives to improve the environment situation. The future technology will be used efficient and effectively by them also. However, the most central part of the aviation industry would not be able to connect to and use renewable energy like wind farms or tidal energy extractions, although the offices could operate based on them. This means that no matter how many transformations will be done within the sector, airlines would not still be able to compete with the growth of railways in terms of the carbon footprint. There will always be the ground transport operations and the noise emissions which cannot be forgotten when calculating the effects on flora, fauna, and air.

This first scenario will be encouraged also by the critical observation directed to the aviation business, because of their environmental "crimes". This involves a direct intervention from political side with constraints, that might be considered in many cases that will lead to unwanted imbalances in the system, such as in capacity and demand. However, because the railways industry will develop accordingly, the supply will not be drastically reduced, but replaced with a favorable mean of transport. However, "The attempt to protect society legislatively from the environmental impact of civil aviation with such weak initiatives as taxations will increasingly open of the secondary impacts on society". Mainly, these impacts will be on the GDP (Domestic Gross Product), leading to the economic destabilization of industries on which some societies depend. Then, the debate would suggest two options of limiting the airlines demand effectively. One of them is that for the routes that a decent time railway connection exists, traveling via plane will not be allowed. It this case, between all the well-known destinations for tourists who travel within the same continent will be one, so they have the alternative assured. The other option is to change the price policy, so the price of the flights tickets will be tailor made for each customer income. In this way, wealthier people will not be able to abuse the opportunities while the right to flight will not be restricted anymore. In both cases, the implication of government will force the moderation of the air transport and will switch the unserved demand to more environmental options such as high-speed trains or ships.

6.3 Scenario II – The plane ticket to future

The second scenario will be defined by unbelievable technology breakthrough in the flight industry which will boost the demand. This implies the fact that people will completely forget about Flight Shame because its aims are not anymore valid. Second case will have enormous effects on the railway business in terms of sales, coinciding with what IEA called as Base Scenario, where there is will be no expansions. The grow of one industry is directly influencing the other one, so the level to which the expansion of demand for flights

will depend on the innovations brought by rails. The fact that building new high-speed railways is demanding a lot more land than expanding or building new airports. That space is probably used at the moment by communities, so it would have a direct negative effect on people's personal space. The noise pollution it is also a major disturbing factor that should be avoided. The environmental problem impact will become the most important player for influencing the travel choices worldwide.

The next step is that the aviation industry will manage effectively to find a balance between the environmental demand and the demand for an increased productivity. In order for this to be achieved, there must be prioritized what is essentially or necessary and what is desirable. Until now, it seems like being efficient in terms of profit was to only aim. However, the environmental target will become the only concern for the future air transport system.

On the same level with air vehicles, the emissions from support the airport and terminal operations are taken into consideration when considering the negative effects aviation industry has on the climate change. They include public-transport vehicles that convey the customers to and from the airport, the cars used by the staff to arrive at job, lorries that bring food supplies, the vans and tractors used for luggage. By 2050, it is expected that all of these will be replaced with electric options. The funds will be too high, so there will be a governmental program that will fund and support the businesses, so the change is achievable. The next initiative will be the implementation of biofuels made out of organic sources, from renewable plant matter. It is a short-term solution that could improve the situation until the fully electric propulsion or even hybrid electric one are ready to be implemented. The obstacle would be the price of producing it. Last year, just 0,1% of the total aviation fuel consumption was sustainable. However, this could become the main fuel used because travelers are willing to pay extra money on top of their ticket to fly carbon-free. The more it will be used, the more the price will go down and start to be accessible. In 2018, The International Council on Clean Transportation, which in the past exposed Volkswagen for diesel emissions fraud, affirmed that the aviation industry is responsible for 2,4% of all carbon emissions from fossil-fuel use. The efforts of airlines to reduce the quantity emitted can be seen already for Australia's aviation industry, where the intensity dropped by 1,4% since 2013. It is expected that by 2050, the worldwide quantity will be around 0,5% maximum, taking into account that also the number of passengers will grow exponentially. (D. Yengin, 2020)

6.4 Scenario III – The lost chance

There is also the possibility of a reality where, in 50 years, nothing will change at all. The Flight Shame phenomenon will not be marketed more than it is now, the investments in the high-speed railways will not be prioritized and the demand for aviation industry will continue to increase. This is the worst-case scenario for the climate situation around the word.

Flights will remain the favorite mean of transport among travelers. They will abuse it, no matter what the costs for our environment will be, because there is no constraint and no one prioritize the change. Everyone will still consider the most favorable way to travel from point A to point B in terms of time efficiency or price, no matter the effects on the climate. The hours spent between places on the actual journey is expected to be the shortest, and any environmental effect will not be preferred, rather than choosing the faster method of traveling. The interest and efforts of individuals to understand, care and cut down the level of CO2 emissions are expected to stagnate. Furthermore, it will be unlikely to notice any legislative implication coming from the officials, due to the high costs of operating airlines. Maybe, the first change will be acknowledged in the state-based ones. If they meet success, then the applications will be required to be executed also by the private businesses.

The aviation demand is estimated to grow around 1.5% each year considering this case. According to USB, until now, each year, the global air travel has grown around 4%, and this rate will continue to occur in the next centuries also. Which would lead up to a double number of passengers every 15 years. Some people, especially in the most developed countries, will continue to be interested in how to reduce their carbon footprint while traveling, while some will continue to be careless. The decline of passenger's numbers is expected to persist. Although climate change facts cannot be denied, flying accounts for a quite a small of the carbon emissions, just for 2%. The enjoyable and positive aspects that it brings into our life must be also taken into consideration. Flights link up families, friends, even employment and are usually correlated with vacations, the hard-earned time everyone waits to share with their loved ones.

7 Forecasting Performance

7.1 Accuracy

In a survey conducted by Witt and Witt (Witt S.F., 1992, pp. 1553-61) regarding the tourism demand forecasters and the ones who are using forecasts, they found that the most important evaluation criteria in forecasting is accuracy. A concept that is used for measuring the accuracy is called ”error magnitude”, and it represents the forecast error in relationship with a forecasting model. It is defined by a mathematical operation, which is: $E_t = A_t - F_t$, where ”t” is the time period, ”E” is the forecast error, ”A” is the actual value of the variable being forecast and ”F” is the forecast value. However, Flight Shame phenomenon should be analyzed and researched based on thousands of respondents for consecutive years. After this process, it would worth to be established the value of the error. Forecasting error is positive when the actual value is greater than the forecast one at one period of time. If the actual value A is less than the forecasts’ , then the forecasting error is negative. (Frechtling, 2001, p. 24)

However, it is expected that any forecasting model that aims to study human behavior will meet errors due to some factors that might interact. One of them is the omission of variables that influence the forecast. In this case, there might be other factors why the future aviation demand might suffer in the near future and other means of transport will be chosen. Environmental issue might be one of them, but the phenomenon of flight shame itself can have no direct impact. Randomness of customer behavior should be also taken into consideration as an unmeasurable variable. Another one is called ”measurement error” , suggesting that it is impossible to measure variables related to tourism demand with a 100% accuracy. In this case, we can measure the intentions for a small part of the residents of Helsinki, but it is impossible to talk about the future of the whole aviation industry based on the data collected. To which extent airlines will be affected worldwide is unmeasurable at the moment. The third variable that influences the errors of a forecast is the human indeterminacy. Besides the fact that people do not behave rational all the time like it should be, patterns of planned behavior can change surprisingly fast. People might say now that they will take into account their environmental impact while thinking about their next trip, but when the actual purchases and decision will be taken, they can forget about it. The degree of randomness in the customer behavior is an essential factor that influences the degree of forecast error.

Furthermore, there are three types of errors that will turn the intentions of the respondents into possible invalid answers. The first one is that problems can occur from generalizing facts to predict the future just from one sample of the population. We can make just estimation by statistical sampling theory and just make further recommendations, as done in the scenarios from above. The second one is the non-response error from the people that did not take part of the survey. Even if I achieved almost 100 respondents, in order to have an accurate generalized conclusion, the responsing rate should be higher.

7.2 Forecasting model evaluation criteria

According to Frechtling (Frechtling, 2001), there are available crieterias that will help with the evaluation and assessment of the forecast. Firstly, the model must have a specified and clearly detailed structured beforehand. The common mistake is that input and output are mentioned, but how the information is analzsed is not explained. This aproach is also known as ”black box”, and it shows that no scientific knowledge from previous studies has been made, thus it will make difficult to evaluate the forecast. Secondly, while examining a model’s format, it has to be determined its credibility. If the survey does not meet in a logical method the real life’s actions, then the probability to produce an accurate forecast is low. It has to be plausible and its topic should be more than a common sense theory. Then, there is there is a pragmatic factor which acceptability. The one who evaluates should check if the forecast would be acceptable to the managers that will use it. If it not, then which is the reason to do take into consideration a forecast that the management would find unacceptable in the assumptions made. Moreover, the forecast should have an explanatory power. It seems obvious that a forecast has to bring value in the industry, and one of its prorities must be to explain even more than what the managers need to know so they can act accordingly. The next requirement is that the forecast model has to be robust. The less are the impacts of the extreme values from the historical series in a survey, the more robust the forecast is. These extreme values are also known ”outliers”, because ”they lie outside of the range of most of the other values”. (Frechtling, 2001)

An actual example would be how the aviation industry across the North Atlantic suffered because of the Gulf War in 1991. Another event is the spreading of the COVID-19 which is affecting the whole industry. If the forecast is sensitive, then the data which it provides would change significantly if these outliers are not taken into consideration. The robust ones are still available and important because the lack of given importance to these extreme historical values. An important evaluation factor given by the philosopher William of Ockham is parisomny. He built a logical principle called Ockham’s Razor which affirms that ” It is vain to do with more what can be done with fewer”. This criterion promotes the

choice of a simpler forecasting model over the more complex ones, when the aim can be achieved and criterias are similar. By using this principle, time and money can be saved and in many cases abetter accuracy can be achieved. Therefore, before choosing the model, a rigorous evaluation has to be made between the existing and the one which bring the most advantages while is not that complex should be the winner. Finally, the cost of the forecast is important while evaluating it, because time and money are resources with limited availability. The more the forecast is cost efficient, the higher are the chances to be appreciated and preferred by the managers of tourism related businesses.

8 Conclusions and implications

8.1 Conclusions of the research and findings

This survey has precisely followed the qualitative forecasting method, involving the four steps: Select the judges, Pose the questions to the judges, ask for answers, and Obtain the forecast. From author's point of view, each of the phases that must be completed for consumer intention survey meet the requirements. However, the researcher willing to do an actual forecast would imply more judges that would attend the survey. An adequate estimation of how much will the Flight Shame affect the future demand of aviation industry would require a wider public and a long-time period for collecting the data. In author's opinion, more respondents would result in a better understanding of the phenomenon, although there are high chances that no significant impact on the theory would result.

The survey had constructed the theory which suggests that there might be expected a decline of future flight demand or at least a switch in how the industry will operate because of the climate change situation, but not really the Flight Shame movement itself would be the reason. However, the theory of this research has not been gathering enough respondents to have a clear statement about the importance of the phenomenon. The findings and review of the current relationship between future travelers and transportation industry have answered to the researched questions and pushed us to a step closer to understand how future may be looking like.

To sum up, when trying to gather well founded information about the future demand in tourism industry, conducting a survey on consumers regarding their future planned behavior or thoughts is reasonable. However, the efforts applied in this thesis have not completely fulfilled its aims. The outcome and scenarios are based on the small amount of data gathered, considering there the past time series of Flight Shame effects on consumer behavior were almost none.

8.2 Challenges of the study

This survey meets the condition of being original, thus is bringing up into discussion a topic that have not been covered by many researchers before. It has been presenting the connections between various concepts of Flight Shame, forecasting and their dependence on each individual's behavior. Charmax (2006, 183) affirmed that "a strong combination

of originality and credibility increases resonance, usefulness, and the subsequent value of the contribution".

Despite that, challenges have been occurring during the process of the survey. Due to the lack of experience level in conducting surveys, uncertainty played an important role while developing the study. Furthermore, the narrowed time during process of gathering data resulted in having a high rate of respondents that are not answering the questions in a false or superficial manner. Usually, almost no one will take their time to help if there is nothing they will receive in return. In my case, the friendship between us was the saving factor. Since there are no similar research conducted in Helsinki related to the effect of Flight Shame on the industry, this study might be missing comparisons with other studies and reviews between the references.

Risks and limitation are variables that will exists no matter the research method. There are several questions that affirm the difficulties of conducting a study. One of them is to which extent can the research stay objective while the questions of the survey are narrated. Another one concerns how is it possible to verify the results while they have been discovered? Plus, when forecasting, future might bring major disturbances. While the macroenvironmental events are developing slowly during many years, disturbances are short-term changes that cannot be anticipated. In tourism demand, the long-term is seen often by three major questions. They include the effect that might occur in the next ten years that would critically affect our product or market; the year until a new technology will be widely used and how will be the visitor volume in the same time period. To conclude, forecasting tourism demand brings uncertainty up to some extent and its result's success depends on long-term commitment.

8.3 Recommendations and learning outcome

The concepts of Flight Shame and forecasting demand according to the phenomenon are relatively new therefore they form a substantial base for research. Also, they are still to be criticized accordingly from both short-term and long-term point of views. For example, Cartsen Spohr, the CEO of Lufthansa, made a parallel between the Flight Shame and nutrition, affirming that "If someone wants to lose weight, you don't tell them just to stop eating". Afterwards, he described how the food industry acted in response to the consciously eating healthy trend, by improving product labeling so customers can individually choose wisely. Worldwide, shops that are selling food products include a label that explains the quantity of calories, fats, sugar, salt, and carbs. She points that if passengers would be

more aware of the environmental impact their flight have, which is the one of the main purposes of Flight Shame, their decision would be based on an informed assumed choice , which might turn into the ones favorable for climate. Is like a person choosing that wants to lose weight and it has to choose between water or soda. We have the mission to show to the consumers which one is the water in order to see improvements.

I consider that the journey of conducting the survey and writing the thesis was long enough for a first sight of the topic. It all has started in the previous year in 2019 when I came across the concept of Flight Shame as a huge movement that will change the consumer behavior The idea of research topic and finding a suitable method has been visible and chosen after half a year. During this time, the main outcome was to understand the insights of forecasting and what it requires to make it valid and accurate. There are seldom seen long-lasting projects that do not meet any impediments until it is finished. In addition, in this thesis I meet few obstacles that were quite difficult to overtake. They had been passed efficiently so the study can reach its purpose. There is a possibility that my personal interest in the future of aviation and its relationship with environment helped in reaching a conclusion, for now. During the process of writing the thesis, I meet amazing people willing to be a part of the change, who inspired me and boost the topic with energy. I totally recommend that spreading the awareness about Flight Shame. It is a must. One effective way to do it, besides the marketing on media channels, would be conducting related surveys each year and trying to reach as wide geographical regions as possible. Thus, the results of the studies could be compared and working on a proper forecast regarding the effects of phenomenon might become available.

References

Arch G. Woodside & Drew Martin. January 1st 2007. “Tourism Management: Analysis, Behaviour and Strategy” . URL: https://ebookcentral.proquest.com/lib/haaga/reader.action?docID=327879&query= . Accessed date: 08/02/2020.

BBC. July 19th 2019. “What is flygskam”? Greta speaks up about the flight-shaming”. URL:https://www.bbc.co.uk/newsround/49032117 . Accessed date: 04/02/2020 .

BBC. October 2 2019. ”Flight Shame could have growth in air traffic” . URL: https://www.bbc.com/news/business-49890057 .Accessed date: 11/02/2020.

Brandon Graver Ph.D. & Kevin Zhang & Dan Rutherford Ph.D. . Sptember 2019. ” CO2 emissions from commercial aviation, 2018” . URL: https://theicct.org/sites/default/files/publications/ICCT_CO2-commercl-aviation-2018_20190918.pdf Acessed date: 13/05/2020

Charles W. Chase Jr. 2013. “Demand-Driven Forecasting: A Structured Approach to Forecasting. 2nd Edition. URL: https://learning.oreilly.com/library/view/demand-driven-forecasting-a/9781118735572/OEBPS/9781118735572_epub_ch_01.htm . Accessed date: 05/02/2020.

.

Dimitrios Buhalis & Carlos Costa. 2006. “Tourism Management Dynamics. Trends and Management tools”. Elsevier Butterworth Heinemann. Oxford.

Duygu Yengin & Tracey Dodd. 14 January 2020. ”Flight shame won’t fix airline emissions. We need a smarter solution”. URL: https://theconversation.com/flight-shame-wont-fix-airline-emissions-we-need-a-smarter-solution-127257 . Accessed date: 18/02/2020 .

Douglas C. Frechtling. 2001. “Forecasting Tourism Demand, methods and strategies”. Butterworth-Heinemann. 225 Wildwood Avenue. Woburn.

Eoin Bannon. May 13 2019. ”EU sat on data showing benefits of ending airlines’ tax break-leak”. URL: https://www.transportenvironment.org/press/eu-sat-data-showing-benefits-ending-airlines%E2%80%99-tax-break-%E2%80%93-leak . Accessed date: 28/02/2020.

Frank Jordans & David Keyton. June 20 2019. ”Climate of guilt: Flying no longer the highroad for some”. URL: https://apnews.com/cc1b2e6310fc4a31808058c7c0c72d79 , Accessed date: 10/02/2020.

The Guardian. January 17 2020. ” The Guardian view on ”flight shame”: face it – life must change”. URL: https://www.theguardian.com/commentisfree/2020/jan/17/the-guardian-view-on-flight-shaming-face-it-life-must-change .Accessed date: 20/03/2020.

Hanna Hoikkala & Niklas Magnusson. April 14 2019. ”As ’Flying Shame’ Grips Sweden, SAS Ups Stakes in Climate Battle”. URL: https://www.bloomberg.com/news/articles/2019-04-14/as-flying-shame-grips-sweden-sas-ups-stakes-in-climate-battle .Accessed date: 14/03/2020 .

Holloway, S. 2008. ” Straight and Level Practical Airline Economics. 3rd ed”. Publishing Limited. Hampshire.

Inbound Logistics. ”Glossary of Supply Chain Terms” . URL: https://www.inboundlogistics.com/cms/logistics-glossary/ Accessed date: 14/03/2020

International Energy Agency IEA, 2019, ”The Future of Rail. Opportunities for energy and the environment”. URL: https://webstore.iea.org/download/direct/2434 Accessed: 20/04/2020

Jake Whitehead & Michael Kane. April 23 2019. ”Get set for take-off in electric aircraft, the next transport disruption”. URL: https://theconversation.com/get-set-for-take-off-in-electric-aircraft-the-next-transport-disruption-114178 . Accessed date: 14/02/2020.

J. Scott Armstrong. 2000. “Principles of Forecasting. A handbook for Researchers and Practitioners”. URL: https://www.gwern.net/docs/predictions/2001-armstrong-principlesforecasting.pdf Accessed date: 02/02/2020.

James Asquith. January 13th 2020. “The Spread Of Flight Shame In Europe – Is Greta Thunberg The Reason Why?”. URL: https://www.forbes.com/sites/jamesasquith/2020/01/13/the-spread-of-flight-shame-in-europe-is-greta-thunberg-the-reason-why/#56802f7869bd . Accessed date: 05/02/2020.

Jan Ditzen & Erkal Ersoy. October 25 2019. ”Flight shame: flying less plays a small but positive part in tackling climate change”. URL: https://theconversation.com/flight-shame-flying-less-plays-a-small-but-positive-part-in-tackling-climate-change-125440 . Accessed date: 14/02/2020 .

Jocelyn Timperley. January 1st 2019. ”Eight charts show how ”aggressive” railway expansion could cut emissions. URL: https://www.carbonbrief.org/eight-charts-show-how-aggressive-railway-expansion-could-cut-emissions . Accessed date: 12/02/2020.

Karima Delli. 2019. ” European Aviation Environmental Report”. URL: https://ec.europa.eu/transport/sites/transport/files/2019-aviation-environmental-report.pdf Accessed date: 12/05/2020

Kluge, U. & Paul, A. & Cook, A & Cristobal, S. July 2017. ” Factors influencing European passenger demand for air transport”. URL: https://www.researchgate.net/publication/317046009_Factors_influencing_European_passenger_demand_for_air_transport . Accessed date: 04/04/2020

Lloyd Alter. January 14 2019 . ”Danish newspaper will cut most flying and change its travel selection”. URL: https://www.treehugger.com/aviation/danish-newspaper-will-cut-most-flying-and-change-its-travel-section.html . Accessed date: 18/02/2020.

Melissa Hogenboom. April 16th 2019. ” How air pollution is doing more than killinig us”. URL: https://www.bbc.com/future/article/20190415-how-air-pollution-is-doing-more-than-killing-us . Accessed date: 20/02/2020.

Merriam-Webster. February 9th 2020. “Environment” . URL: https://www.merriam-webster.com/dictionary/environment . Accessed date: 09/02/2020

Mike Hirst. 2008. “The Air Transport System”, The American Institute of Aeronautics and Astronautics. Reston. Virginia.

Paul Peeters & James Higham & Diana Kutzner & Scott Cohen & Stefan Gössling. May 2016. ”Are technology myths stalling aviation climate policy?” . URL: https://www.researchgate.net/publication/296632724_Are_technology_myths_stalling_aviation_climate_policy .Acessed date: 01/03/2020.

Phys.org. April 1 2018. ”Sweden introduces eco-friendly aviation tax”. URL: https://phys.org/news/2018-04-sweden-eco-friendly-aviation-tax.html . Accessed date : 03/02/2020.

Richard Orange. June 13 2019. ” Following Greta: joining the Swedes on their no-fly holidays”. URL: https://www.theguardian.com/travel/2019/jun/13/following-greta-joining-the-swedes-on-their-no-fly-holidays . Accessed date: 05/03/2020.

Rob Gill. February 26 2020. ” Travel Firms Responding "Positively" to Fligh Shaming and Sustainability Trends” . URL: https://www.ttgmedia.com/news/news/travel-firms-responding-positively-to-flight-shaming-and-sustainability-trends-21450 . Accessed date: 10/03/2020

Roger Harrabin. BBC. May 11 2019. ”Climate change ’may curb growth in UK flying ”. URL: https://www.bbc.com/news/science-environment-48233548, Accessed date: 15/02/2020.

Ryan, C. & Page, S. 2000. ”Tourism management: towads the new millenium”. Pergamon. Oxford

Scott A. Coheri & James E.S.Higham & Christina T. Caveliere. July 2011. ”Binge flying: Behavioural addiction and climate change” . URL: https://www.sciencedirect.com/science/article/abs/pii/S0160738311000193 . Accessed date: 15/02/2020.

Sharon Beder. May 28 2014. ”Carbon offsets can do more environmental harm than good”. URL: https://theconversation.com/carbon-offsets-can-do-more-environmental-harm-than-good-26593 . Accessed date: 11/02/2020.

Spyros Makridakis & Steve Wheelright & Rob J. Hyndman. January 2000. “Manual of Forecasting: Methods and Applications” . URL: https://www.researchgate.net/publication/294871600_Manual_of_Forecasting_Methods_and_Applications . Accessed date: 03/02/2020.

Stefan Gossling. 2002. ” Global environmental consequences of tourism” . URL: http://ssu.ac.ir/cms/fileadmin/user_upload/Moavenatha/MBehdashti/Pishgiri_Bimariha/00malt2/27.pdf Accessed date: 12/05/2020

Stephen F. Witt & Christine A. Witt. 1992. ” Modeling and Forecasting Demand in Tourism”. Academic press. London.

Swedavia. February 11 2020. ”Swedavia’s traffic statistics for January 2020”. URL: https://www.swedavia.com/about-swedavia/swedavias-newsroom/ . Accessed date: 11/02/2020 .

Zhang, H. & Zhu, M. 13 September 2011. ”An Empirical Research on the Relation between the Air Transportation and Economic Growth. International Conference on Management Science & Engineering”. URL: https://ieeexplore.ieee.org/document/6070033 . Accessed date: 10/02/2020

Appendices

Attachment 1 : Survey questions

Flight Shame

1. Under which age group do you belong to?

- ○ 24 or less
- ○ 25-39
- ○ 40-54
- ○ 55-75

2. How many times did you travel in the past year?

- ○ Never
- ○ Once
- ○ Two or three times
- ○ More than three times

3. Which mean of transport did you chose in order to travel ?

- ○ Airplane
- ○ Bus
- ○ Car
- ○ Ship
- ○ Train

4. Which was the reason why you chose it?

- ○ Price
- ○ Time efficiency
- ○ Pleasure
- ○ Other

5. Were you aware of the effects your individual transportation has on environment?

0

Never thought about it — Concious about the CO2 used

0 — 5

3=Know its existence

6. Have you heared about the Flying Shame phenomenon? (What is Greta Thunberg promoting)

- ○ Yes
- ○ I am not sure
- ○ No

7. How would you describe in few words the Flight Shame phenomenon?

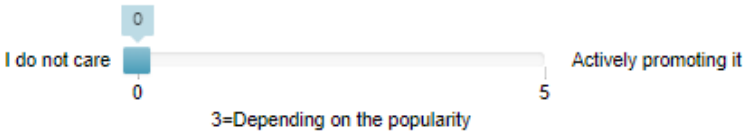
8. In terms of the environmental impact while traveling abroad, how ashamed do you feel when you use (1=not ashamed at all => 5=very guilty)

	1	2	3	4	5
Airplane	☐	☐	☐	☐	☐
Bus	☐	☐	☐	☐	☐
Car	☐	☐	☐	☐	☐
Ship	☐	☐	☐	☐	☐
Train	☐	☐	☐	☐	☐

9. How would you feel if the means of transport you used cause more environmental damage than what your friends used?

- ○ Embarassed
- ○ Careless
- ○ Proud
- ○ I do not know

10. Would you follow a trend that suggests always choosing train while traveling?



11. What should railways change to chose them in detriment of flying?

- ☐ The frequency of the trains times
- ☐ More comfortable interiors
- ☐ More connections between destinations
- ☐ Promote more packages
- ☐ Advertise the advantages to travel by train
- ☐ Extra-services available on the road
- ☐ The time efficiency

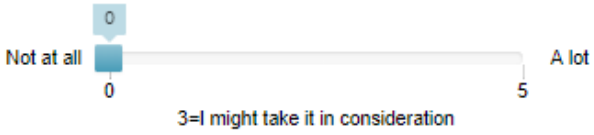
12. Considering that you are concious of the individual benefits on the climate made by traveling with the train, would you spend more time to arrive to your destination ?

- ○ Yes
- ○ Maybe
- ○ No

13. A direct flight from Helsinki to Bucharest lasts 2 and a half hours. How much is the extra travelling time you could accept in order to be environmentaly friendly?

- ○ Max. two hours
- ○ 3-5 hours
- ○ 6-8 hours
- ○ More than 8 hours

14. How much will the climate change situation influence the means of transport you will chose in your future trips?



15. Are you willing to pay extra for a transport ticket if it would be more environmentaly-friendly?

- ○ Yes-more than 10% of the ticket
- ○ Yes- less than 10% of the ticket
- ○ Sometimes
- ○ No

16. Who should solve the problem of transportation emission?

- ○ Government
- ○ Customers
- ○ Business and industry (e.g. Quatar Airways)
- ○ Environmental organisations (e.g. Greenpeace)
- ○ Others

17. A proposal to prevent the greenhouse gasses from increasing might be a legislative intervention which would limit the usage of flying on specific routes that are connected by high-speed rail. Do you agree with it?

- ○ Yes, it is the best solution
- ○ No, people have to change their behaviour without legislative intervention
- ○ I am not sure, it depends on

18. Considering the growing demand of air transport and its environmental impact, what change would you suggest?

- ☐ People should fly less when train is an option available
- ☐ Airlines should pay extra fees for the negative effects on environment
- ☐ Individuals must have a limit of flights per unit of time
- ☐ The costs of the tickets should be tailor made on income
- ☐ The price of tickets must raise exponentially
- ☐ It is already too late for a change, no climate change is not a reversible event
- ☐ Other

19. How willing are you to change your travelling habits to reduce the damage you cause to the environment?

	0	1	2	3	4	5	6	7	8	9	10	
Not interested	○	○	○	○	○	○	○	○	○	○	○	I am ready to be a part of the change